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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/589,976

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EXAMINER

WONGWIAN, PHUTTHIWAT

ART UNIT

PAPER NUMBER

3746

MAIL DATE

DELIVERY MODE

09/24/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/589,976	Applicant(s) YAGI ET AL.	
	Examiner PHUTTHIWAT WONGWIAN	Art Unit 3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>08/18/2006, 12/04/2007</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1, 10 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. As to claims 1 and 10, the limitation "characterized by comprising" is unclear of which element is characterized by comprising.

4. As to claims 1, 10 and 19, the limitation "an air flow path formed between outside air in a substantially airtight stage" is unclear of what is "substantially airtight stage" means and also "an air flow path formed between outside air " and what. As best understood by examiner, "substantially airtight stage" interprets as compressed air and "an air flow path formed between outside air" interprets as the compressed air form within the inlet.

5. As to claim 19, the limitation "comprising the step of:" is unclear of which method comprising the step of.

Claim Objections

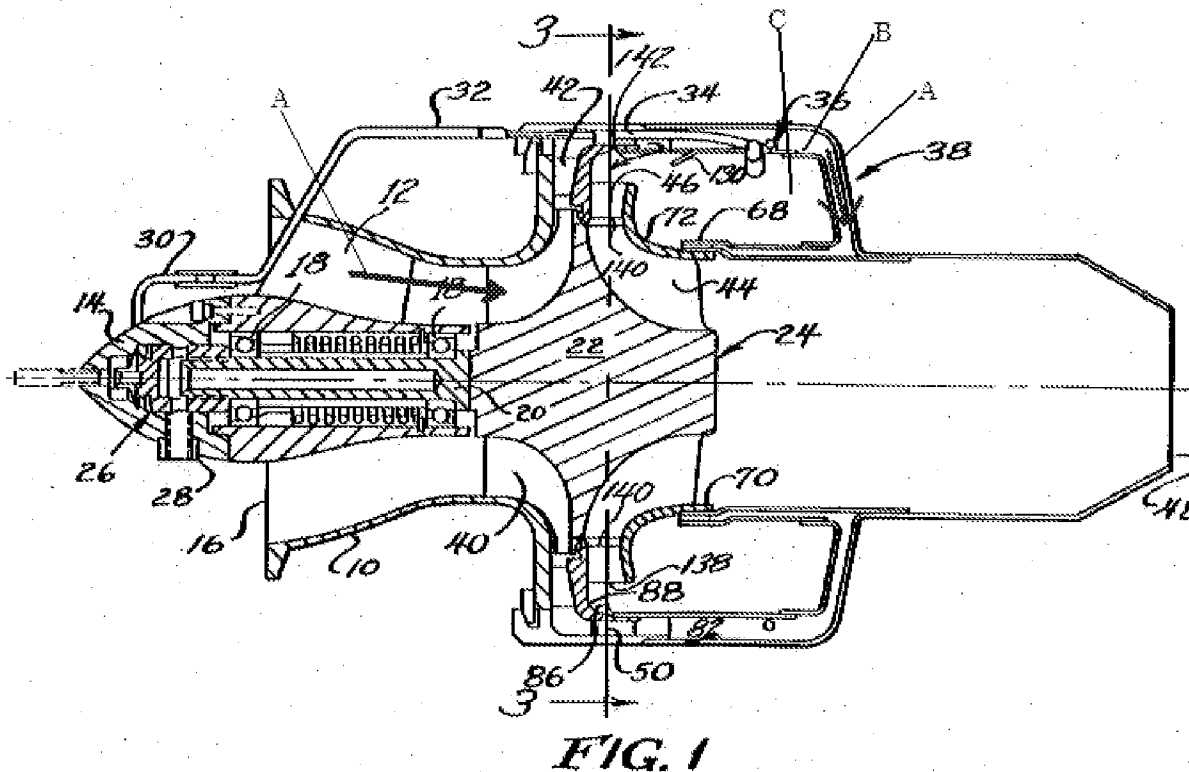
6. Claims 1 and 10 are objected to because of the following informalities: the limitation "a nozzle which injects in claim 1 and a turbine nozzle which accelerates in claim 10" should be changed to "the nozzle which injects and the turbine nozzle which accelerates". Appropriate correction is required.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

8. Claims 1-3, 5, 7, 10-12, 14, 19 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Shekleton (US Patent No. 4,825,640).



9. As to claims 1, Shekleton discloses a radial turbine (fig. 1 above) comprising: a scroll B (fig. 1 above) which forms a combustion gas flow path A (fig. 1 above) for

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guiding a combustion gas generated in a combustor C (fig. 1 above) to a nozzle 42 (fig. 1); the nozzle which injects the combustion gas to a radial impeller 44 (fig. 1) on an inner side in a radial direction of a rotary shaft 20 (fig. 1); and a shell 72 (fig. 1) which covers the nozzle and the impeller and forms the combustion gas flow path, an air flow path A (fig. 1 above) formed between outside air in a substantially airtight state; an air take-in hole 12 (fig. 1) which takes in air into the air flow path from the outside; a blow-off hole 96 (fig. 1) which guides a part of the air taken into the air flow path, into the combustor; and a through-hole 134 which injects the other part of the air 142 taken into the air flow path to a vicinity of the nozzle in the combustion gas flow path.

10. As to claims 2, 3 and 12, Shekleton discloses the air flow path is formed to cover an outer side (fig. 1) of the combustion gas flow path communicating from the combustor to the shell (fig. 1) and the through-hole 134 is formed in a wall of the shell to communicate between the air flow path and an upstream 12 of the nozzle of the combustion gas flow path.

11. As to claims 5 and 14, Shekleton discloses a plurality of the through-holes 134 are arranged in parallel (fig. 1, the cooling flow 142 injects parallel to the combustion gas, therefore, the through holes are arranged in parallel to the combustion gas) along a flowing direction of the combustion gas flow path.

12. As to claim 7, Shekleton discloses the through-hole includes a through-hole which tilts in a flowing direction of the combustion gas flow path and penetrates a wall of the shell (fig. 1, the cooling flow 142 injects parallel to the combustion gas, therefore, the through holes are tilted).

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13. As to claim 10, Shekleton discloses a combustor liner B (fig. 1 above) which mixes and combusts compressed air and a fuel to generate a combustion gas; a turbine scroll 72 (fig. 3) which forms a combustion gas flow path for supplying the combustion gas generated in the combustor liner to a turbine nozzle 46 (fig. 1); the turbine nozzle which accelerates the combustion gas toward an inner side in a radial direction of a rotary shaft 20 (fig. 1) and supplies the combustion gas to a radial turbine impeller 44 (fig. 1); and a turbine shell 72 (fig. 1) which covers the turbine nozzle and the radial turbine impeller, an air flow path A (fig. 1 above) formed between outside air in a substantially airtight state; an air take-in hole 12 (fig. 1) which takes air into the air flow path from the outside; a blow-off hole 96 (fig. 2) which guides a part of the air taken into the air flow path, into the combustor liner; and a through-hole 134 which injects the other part of the air taken into the air flow path to a vicinity of the nozzle in the combustion gas flow path.

14. As to claim 11, Shekleton discloses the air flow path A (fig. 1 above) is formed by a turbine casing 72 (fig. 1) so as to cover an outer side of the combustion gas flow path communicating from the combustor to the shell and to maintain air-tightness with respect to the outside air.

15. As to claim 19, Shekleton discloses a method of cooling a nozzle of a radial turbine including the steps of: guiding a combustion gas (fig. 1) from a combustor C (fig. 1 above) to a nozzle 46 (fig. 1) through a combustion gas flow path including a scroll 72 (fig. 1); and injecting the combustion gas to a radial impeller 44 (fig. 1) on an inner side in a radial direction from the nozzle, taking in air from the outside into an air flow path A

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(fig. 1 above) formed outside the combustion gas flow path in a substantially airtight state with respect to outside air; guiding a part of the air taken into the air flow path (fig. 1), to the combustor; and injecting 134 the other part of the air 142 taken into the air flow path, to a vicinity of the nozzle in the combustion gas flow path.

16. As to claim 20, Shekleton discloses the step of injecting the air to the vicinity of the nozzle in the combustion gas flow path includes a step of injecting the other part of the air 142 (fig. 3) along a surface of a blade 136 (fig. 3) forming the nozzle.

17. Claims 1, 4, 10, 13 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Corrado (US Patent No. 5,280,703).

18. As to claims 1 Corrado discloses a scroll 30 (fig. 1) which forms a combustion gas flow path for guiding a combustion gas 34 (fig. 1) generated in a combustor to a nozzle 40 (fig. 1); the nozzle which injects the combustion gas to a radial impeller 16 (fig. 1) on an inner side in a radial direction of a rotary shaft; and a shell 42 (fig. 1) which covers the nozzle and the impeller and forms the combustion gas flow path, an air flow path formed between outside air 14 (fig. 1) in a substantially airtight state; an air take-in hole 12 (fig. 1) which takes in air into the air flow path from the outside; a blow-off hole 38 (fig. 1) which guides a part of the air taken into the air flow path, into the combustor; and a through-hole 68 (fig. 1) which injects the other part of the air taken into the air flow path to a vicinity of the nozzle in the combustion gas flow path.

19. As to claim 10, Corrado discloses a combustor liner 30 (fig. 1) which mixes and combusts compressed air and a fuel to generate a combustion gas; a turbine scroll 42

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(fig. 1) which forms a combustion gas flow path for supplying the combustion gas generated in the combustor liner to a turbine nozzle 40 (fig. 1); the turbine nozzle which accelerates the combustion gas toward an inner side (toward turbine 16) in a radial direction of a rotary shaft (turbine connects to the shaft in order to extract turbine energy) and supplies the combustion gas to a radial turbine impeller 16 (fig. 1); and a turbine shell 42 (fig. 1) which covers the turbine nozzle and the radial turbine impeller, an air flow path formed between outside air in a substantially airtight state; an air take-in hole which takes air into the air flow path from the outside; a blow-off hole 12 (fig. 1) which guides a part of the air taken into the air flow path, into the combustor liner; and a through-hole 68 (fig. 1) which injects the other part of the air taken into the air flow path to a vicinity of the nozzle in the combustion gas flow path.

20. As to claim 19, Corrado discloses a method of cooling a nozzle of a radial turbine including the steps of: guiding a combustion gas 34 (fig. 1) from a combustor to a nozzle 40 (fig. 1) through a combustion gas flow path including a scroll 42 (fig. 1); and injecting the combustion gas to a radial impeller 16 (fig. 1) on an inner side in a radial direction from the nozzle, taking in air from the outside 14 (fig. 1) into an air flow path formed outside the combustion gas flow path in a substantially airtight state with respect to outside air; guiding 38 (fig. 1) a part of the air taken into the air flow path, to the combustor; and injecting 68 (fig. 1) the other part of the air taken into the air flow path, to a vicinity of the nozzle in the combustion gas flow path.

21. As to claims 4 and 13, Corrado discloses the through-holes 68, 56 are formed in both walls of the shell sandwiching the combustion gas flow path to penetrate the both

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walls of the shell from the air flow path to communicate with the combustion gas flow path.

Claim Rejections - 35 USC § 103

22. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

23. Claims 6, 8, 15, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shekleton in view of Noe (Pub. No. 20030031555).

24. As to claims 6, 8, 15, 16 and 17, Shekleton discloses the nozzle includes a circular blade cascade 136 (fig. 3) in which a number of blades (fig. 3) are arranged in a row in the circumference of which center is a turbine rotary shaft 20 (fig. 1) but does not disclose that each through-hole includes a plurality of shell through-holes along a surface of each blade of the circular blade cascade wherein the shell through holes tilting in a flowing direction of the combustion gas flow path and penetrates a wall of the circular blade cascade. However, Noe teaches that each through-hole 22, 22B (fig. 3) includes a plurality of shell through-holes 22, 22B (fig. 3) along a surface of each blade (fig. 3) of the circular blade cascade wherein the shell through holes tilting 34 (fig. 3) in a flowing direction of the combustion gas flow path and penetrates a wall of the blade 34 (fig. 4). Therefore, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Shekleton's invention to include that each through-

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hole includes a plurality of shell through-holes along a surface of each blade of the circular blade cascade wherein the shell through holes tilting in a flowing direction of the combustion gas flow path and penetrates a wall of the circular blade cascade, as suggested and taught by Noe, for the purpose of providing more effective cooling for the turbine nozzle, thereby, improving the efficiency of the engines.

25. Claims 9 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Corrado in view of Noe (Pub. No. 20030031555).

26. As to claims 9 and 18, Corrado discloses a through-hole 68, 56 which leads from one side of the air flow path sandwiching the combustion gas flow path to the other side of the air flow path while penetrating a wall of the shell (fig. 1), a blade thick portion (leading edge of the blade 54, the leading edge of the blade also shows in Shekleton, fig. 3) of the nozzle and a wall of the shell on the other side. Corrado does not disclose that a leakage hole which leads from the blade thick portion of the nozzle of the through-hole to a surface of the nozzle. However, Noe teaches a leakage hole 34 (fig. 3) which leads from the blade thick portion 22 B (fig. 3) of the nozzle of the through-hole to a surface of the nozzle (fig. 3). Therefore, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Corrado's invention to include the leakage hole which leads from the blade thick portion of the nozzle of the through-hole to the surface of the nozzle, as suggested and taught by Noe, for the purpose of providing more effective cooling for the turbine nozzle, thereby, improving the efficiency of the engines.

Conclusion

Applicant is duly reminded that a complete response must satisfy the requirements of 37 C.F. R. 1.111, including: "The reply must present arguments pointing out the specific distinctions believed to render the claims, including any newly presented claims, patentable over any applied references. A general allegation that the claims "define a patentable invention" without specifically pointing out how the language of the claims patentably distinguishes them from the references does not comply with the requirements of this section. Moreover, "The prompt development of a clear Issue requires that the replies of the applicant meet the objections to and rejections of the claims." Applicant should also specifically point out the support for any amendments made to the disclosure. See MPEP 2163.06 II(A), MPEP 2163.06 and MPEP 714.02. The "disclosure" includes the claims, the specification and the drawings.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PHUTTHIWAT WONGWIAN whose telephone number is 571-270-5426. The examiner can normally be reached on Monday - Thursday, 7:30am - 5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, KRAMER C. DEVON can be reached on 571-272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/P. W./
Examiner, Art Unit 3746

/Devon C Kramer/
Supervisory Patent Examiner, Art
Unit 3746